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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/881,662 | 06/15/2001 | Kenji Tsukada | Q64982 | 6948 |

7590 04/30/2004

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, NW
Washington, DC 20037-3213

EXAMINER

VO, ANH T N

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|--|--------------------------------------|---------------------------------------|--|
| <p align="center">Office Action Summary</p> | Application No. 09/881,662 | Applicant(s) TSUKADA ET AL. | |
| | Examiner Anh t.n Vo | Art Unit 2861 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 00/14/2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____. | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____. |
|---|--|

NON-FINAL REJECTION

Continued Prosecution Application

The request filed on May 14, 2003 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/881,662 is acceptable and a CPA has been established. An action on the CPA follows.

Response to Applicant's Amendment

The rejection over Walker (EP1088668) is withdrawn in view of the amendments to the claims.

The proposed correction of the drawings filed on 4/3/02 is approved.

Rejections

Claim Rejections - 35 U.S.C. § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-37 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Hara et al (US Pat. 6,312,115) in view of Hasegawa et al. (JP Pat. 62095225) and further in view of Lichte (US 5,586,085) and Steel (US 5,068,836).

Note: The method steps are inherently taught in the apparatus device/limitations in the rejections as follow:

Hara et al disclose in Figure 17-18E and 19 an ink cartridge comprising:

- a container body (1);
- a pressure reducing container (43) and a vacuum pump (45);
- charged ink (67);
- wherein a pressure in the ink body (1) is reduced to a pressure lower than an atmosphere pressure by the vacuum pump (45) and the container (1) is charged with the charged ink (67).

However, Hara et al. do not disclose the piezoelectric device for detecting a consumption condition of the liquid including the cavity provided for contacting the ink.

Nevertheless, Hasegawa et al. teach in Figures 1-5 an ink tank comprising a piezoelectric device (4,5) attached to the ink tank for detecting the remaining amount of ink or the ink consumption condition in order to alarm the operator but does not disclose that the cavity contacts to the ink.

Lichte teaches in Figure 4a and 7a-7b a detector (110) having an adaptor (750) for attaching to the container (300) at a cavity (310) for easily inserting and removing, see column 28 but does not disclose that the cavity is a part of the detector.

Steel teaches in Figure 1 an integrated transducer comprising a housing (1) and a cavity (4) is a part of the transducer for holding liquid for a piezoelectric element (6).

It would have been obvious to a person having skill in the art at the time the invention was made to incorporate the piezoelectric device taught by Hasegama, Lichte and Steel into the ink container of Hara et al for the purpose of providing an integrated detector for detecting the consumed ink in the cartridge and allowing the detector being easily inserted and removed from

Art Unit: 2861

the cartridge. A skilled artisan recognizes that the cavity (310) of Lichte can be modified by permanently attaching to the adaptor (750) instead of the container for reducing size of the container without changing the function of the detector. Also, selecting the steps of assembling and refilling the ink container to reduce cost would be obvious to a person having skill in the art. Thus, attaching the cavity to the detector of Lichte for reducing size of the container is considered to be a matter of a mechanical design expedient for an engineer. It would have been obvious to a person having skill in the art at the invention was made to permanently attaching the cavity to the detector of Lichte for the purpose of reducing size of the container.


Response to Applicant's Arguments

The applicant argues that the transducer of Lichte does not have a cavity contacting any liquid by itself. The argument is not persuasive because this limitation is taught by Steel as discussed above and permanently attaching the cavity for reducing cost is considered to be a matter of a mechanical design expedient for an engineer that would have been obvious at the time of the invention.

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo whose telephone number is (571) 2722262. The examiner can normally be reached on Tuesday to Friday from 8:00 A.M. to 6:00 P.M.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 872-9306.



ANH T.N. VO
PRIMARY EXAMINER

April 26, 2004